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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/781,820	02/12/2001	Bradley Paul Barber	L-122600	8550

7590 09/17/2007
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EXAMINER

MALSAWMA, LALRINFAMKIM HMAR

ART UNIT	PAPER NUMBER
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2823

MAIL DATE	DELIVERY MODE
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09/17/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/781,820

Applicant(s)

BARBER ET AL.

Examiner

Lex Malsawma

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4, 6, 9, 10, 19-23 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-4, 9, 10, 19-23 and 25 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection and unintentional abandonment, revived by the petition granted on July 06, 2006. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on June 19, 2006 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 2-4, 9, 10, 19-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baba et al. (6,475,317 B1; hereinafter, “Baba”) in view of Stokes et al. (5,552,655; hereinafter, “Stokes”).

Regarding claims 19:

Baba discloses a method for eliminating or substantially reducing a step height of an electrode formed on a substrate, the method being applicable to laminated piezoelectric members (note Col. 1, lines 8-11), and the method comprising the steps of:

forming a base electrode 13 (Figs. 4A-4B) by providing a substrate 11;

depositing and patterning a first conductive layer to define the base electrode 13 with an edge region having a first height relative to the substrate 11;

placing a second layer 17 of material over the substrate with a portion positioned along the edge region of the base electrode, said portion having a height relative to the substrate so as to eliminate or substantially reduce a step along the base electrode edge region relative to the first height (Fig. 4B).

Baba **does not disclose** forming a second electrode and a piezoelectric film between the base electrode and the second electrode. However, it is noted that even though Baba does not provide details for forming a piezoelectric device, it is clear Baba’s process is intended to be incorporated into the manufacture of piezoelectric devices (note again, Col. 1, lines 8-11); accordingly, one of ordinary skill in the art would have utilized any process known in the art when incorporating Baba’s process into the manufacture of a piezoelectric device.

Stokes is **cited to show** it was very well known in the art that a process for forming a piezoelectric device comprises forming a bottom electrode 20 (Fig. 1) on a substrate 14; forming

a second electrode 18; and forming a piezoelectric film 16 (Fig. 1) between the base electrode and the second electrode to enable application of an electric field to the piezoelectric film.

Given the Baba specifically discloses the method is suitable for laminated piezoelectric members, it would have been obvious to one of ordinary skill in the art to combine the well-known process steps for forming a piezoelectric device, shown by Stokes, with Baba process because the combination would provide a piezoelectric device that isn't affected by a step height of the bottom electrode.

Regarding claims 2-4:

Stokes discloses the piezoelectric film 16 is aluminum nitride (Col. 1, lines 44-45), the electrodes 16, 20 are aluminum (Col. 1, lines 45-46), and the substrate 14 is gallium arsenide (Col. 1, line 43). Therefore, Baba in view of Stokes renders these claims obvious.

Regarding claims 9 and 10:

Although Baba (in view of Stokes) does not specify the second layer being a low-dielectric-constant material or being SiO₂, these claims are deemed obvious over the cited references because the materials recited in the current claims are well known and utilized in the relevant art, and one of ordinary skill in the art would have been able to select suitable well known materials to replace Baba's second layer. Note it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claims 20 and 21:

Baba in view of Stokes would result in depositing Stokes' piezoelectric film on Baba's structure shown in Fig. 4B, i.e., depositing the piezoelectric film on the patterned electrode and

the second layer, wherein the piezoelectric film serves as a support membrane for the device (note Stokes Fig. 1). Therefore, these claims are deemed obvious over the cited references.

Regarding claims 22 and 23:

These claims are similar to claims 19, 2-4, 9, 10, 20 or 21, wherein all pertinent limitations are disclosed in claims 19, 2-4, 9, 10, 20 or 21; accordingly, they are deemed obvious over the cited references.

Regarding claim 25:

This claim is directed to a device acquired by the process in claims 19, 2-4, 9, 10, or 20-23, wherein all pertinent limitations are recited; accordingly, this claim is deemed obvious over the cited references.

Allowable Subject Matter

5. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion


6. Applicant's remarks filed June 19, 2006 have been carefully reviewed and considered, however, they are generally moot in view of the new grounds of rejections presented in this Office action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lex Malsawma whose telephone number is 571-272-1903. The examiner can normally be reached on Mon. - Thur. (4-12 hours between 5:30AM and 10 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

September 12, 2007


LEX MALSAWMA
PRIMARY PATENT EXAMINER